EURIPIDES
Eureka Initiative for Packaging & Integration of µDevices & Smart Systems

EURIPIDES Template for PRESENTATION

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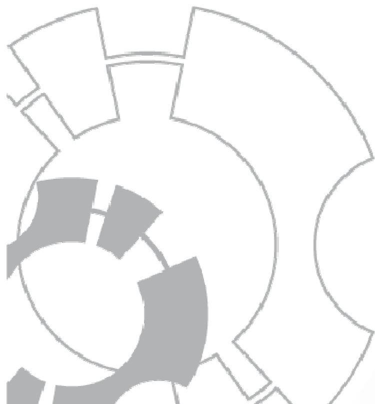
General Outlook

- Homogeneous base material for digital/microwave PCB
- Integration of Transmit/Receive modular systems in the S, C, Ku bands into the *smallest volume* and at *the lowest cost.* Possible extension to the Ka, Q, EHF bands.
- Reliabilty in long term mission and in harsh mission profile
- With this technology, the antennas will be directly integrated on the developed modules
  - allowing to connect them directly to the other parts of the system,
  - paving the way for the realisation of new multi-band or reconfigurable antennas.

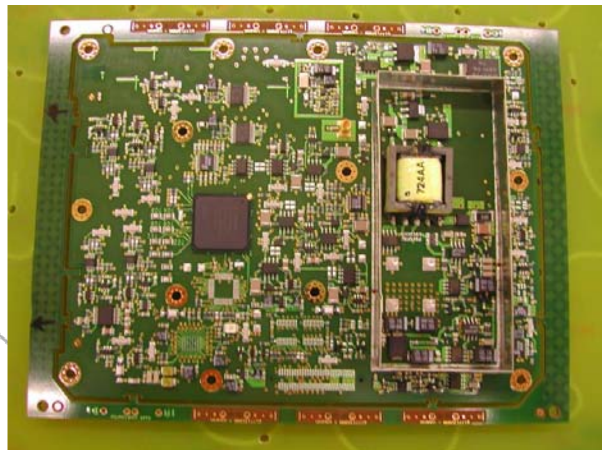
Targets

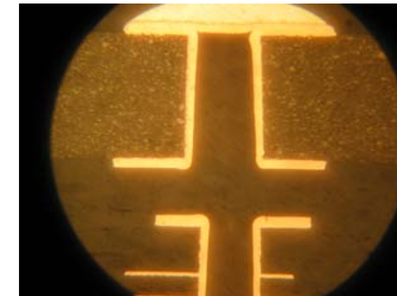
- Wireless Infrastructures (WLAN, SATCOM, Point to Point, BTS 2, 3, et 4G)
- Two markets are addressed
  - ➡ mobile technologies which need only a few MHz bandwidth between 2 et 5 GHz,
  - ➡ fixed technologies needing several tens of MHz between 15 et 46 GHz.
- The project will aim at applications chosen for its strategic importance.



Technical point 1

- **The first technical point is about the printed circuit board.**
- **Conception, realisation, industrialisation of « mixed » boards, i.e. incorporating a « *high frequency* » level and a « *low frequency* » level.**
- **This structure has already been studied on simple stacks involving one or two small size BGA.**



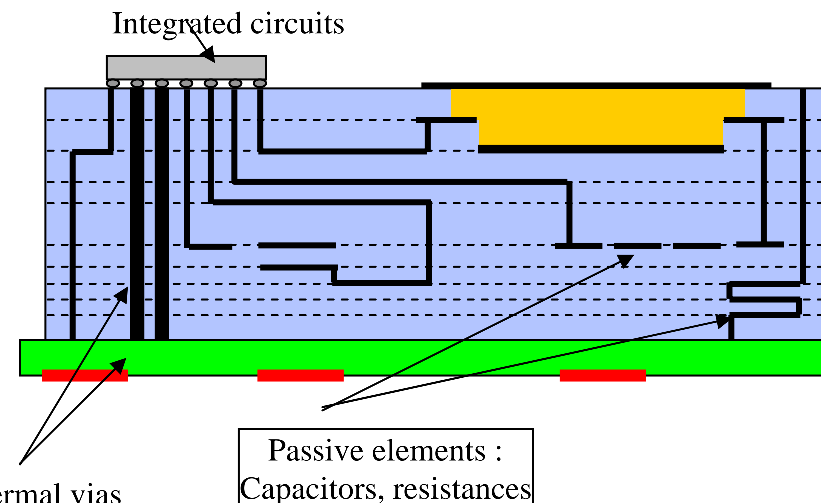


Technical point 1

- **The structure we aim at is more advanced.**
- **It will use the same based material substrate for the microwave part and the low frequency part.**

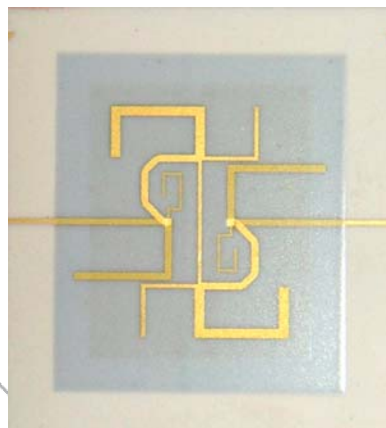
  ➔The cooperation of a resin supplier is mandatory

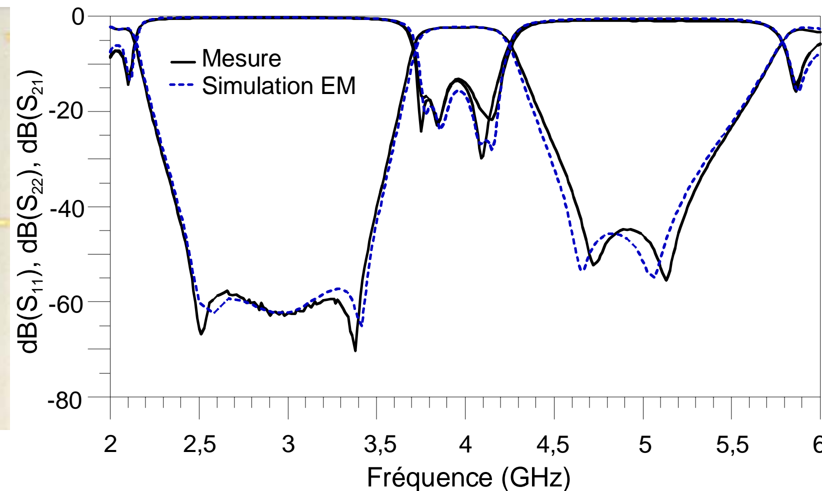
  ➔ PCB suppliers involved in microwave would be welcomed.
- **The board realisation will follow an industrial process validated by a manufacturer or a group of manufacturer**



Technical point 2

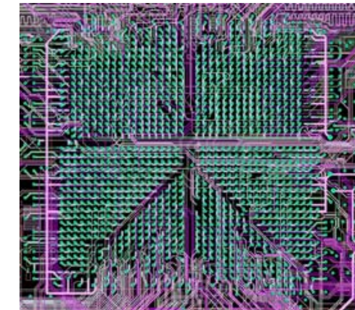
- **The second technical point deals with the integration inside the structure of :**
  - **active microwave elements such as filters (see the scheme of a multilayer filter below)**
  - **passive components, the integration of which is now industrialised, or at least validated.**





(a) (b)

Technical point 3



- Third technical point : components
- 0.4mm step BGA mounting and large body size
- Components must be reparable
- Current realisation of mixed boards usually suffer
  - ➡ from twisting, delamination or rounding phenomena, which cause either a brazing default or a lower reliability of the boards.
  - ➡ This limits the *size and the ball step of the BGA* which can be integrated onto the boards.
- The realisation of low cost autonomous modules cannot tolerate such a default.

➔The choice and validation of the substrate(s) of the bare board must eliminate this problem.

Ultimate goal

- The ultimate goal is a module which is a complete function on its own
- The limits of its functions are to be defined.
- It will have to be integrated in a Transmit or Transmit/Receive chain.
- The various presented elements (filters, antennas, capacitors, resistances, IC, MMIC…)